Claims

1 . A non-stick coating formed on a substrate comprising a primer composition and a topcoat composition, wherein said primer composition is between said topcoat composition and said substrate, said primer composition comprising at least one heat resistant adhesion promoter, said topcoat composition comprising at least one fluorocarbon resin and at least one heat resistant adhesion promoter, other than a fluoropolymer, that may be the same or different than the adhesion promoter of said primer composition, there being inorganic inert particles with an average particle size of at least about 10 micrometers contained in said primer composition.

2. The coating of claim 1 wherein said primer composition is substantially free of fluorocarbon resin.

3. The coating of claim 1 wherein said fluorocarbon resin comprises one or a mixture of fluorocarbons selected from the group consisting of polytetrafluoroethylene, tetrafluoroethylene, hexafluoropropylene, perfluoropropylvinyl ether, perfluoroalkyl vinyl ether, perfluoroalkyl vinyl ethylene and co-polymers tetrafluoroethylene-hexafluoropropylene, tetrafluoroethyleneperfluoroalkyl vinyl ether and ethylene-tetrafluoroethylene.

4. The coating of claim 1 wherein said heat resistant adhesion promoter is selected from the group consisting of polyamideimide resins, polyethersulfone resins and polyphenylene sulfide resins, or combinations thereof.

5. The coating of claim 4 wherein said heat resistant adhesion promoter comprises polyamideimide resin.

6. The composition of claim 1 wherein said primer composition comprises from about 10 wt. % to about 60 wt. % of said adhesion promoter, from about 10 wt. % to about 60 wt. % of said inorganic inert particles and from about 10 wt. % to about 60 wt. % of other ingredients selected from the group consisting of fillers, pigments surfactants , solvents, defoamers and mixtures thereof, the wt. % being calculated on basis of the solid content of said primer composition.

7. The coating of claim 6 wherein said fillers are selected from the group consisting of barium sulfate, calcium sulfate, calcium carbonate, silicas and silicates.

8. The coating of claim 1 wherein said topcoat composition comprises from about 1 wt. % to about 20 wt. % adhesion promoter, the wt. % being calculated on basis of the solid content of said topcoat composition.

9. The coating of claim 1 wherein said topcoat composition comprises at least about 5 wt. % of a fluorocarbon resin that is flowable at a temperature above 300°C.

10. The coating of claim 1 wherein the topcoat composition comprises 55-70 wt. % of a heat stable fluorocarbon resin dispersion, 3-1 0 wt. % of a fluorocarbon resin that is flowable at a temperature above about 300°C and 5-15 wt. % of an acrylic resin, the wt. %, being calculated on the basis of the solid content of said topcoat composition.

11. The coating of claim 1 wherein said topcoat composition comprises one or more of components selected from the group comprising an acrylic resin, butyl carbitol, triethanolamine, oleic acid, a hydrocarbon and a cerium based catalyst.

12. The coating of claim 1 comprising an overcoat composition over said topcoat composition.

13. The coating of claim 12 wherein said overcoat composition comprises at least one fluorocarbon resin.

14. The coating of claim 12 wherein said overcoat composition comprises at least one fluorocarbon resin that is flowable at a temperature above about 300°C.

15. The coating of claim 12 wherein said overcoat composition is essentially free of pigments or fillers.

16. The coating of claim 8 comprising 55-70 wt. % of a fluorocarbon resin dispersion, 3-10 wt. % of a fluorocarbon resin that is flowable at a temperature above about 300°C and about 5-15 Wt. % of an acrylic resin, the wt. % being calculated on the basis of the solid content of said coating.

17. The coating of claim 1 wherein said inorganic inert particles are selected from the group consisting of ceramics, inorganic oxides, carbides or nitrides of elements in groups IIA - VB of the periodic table, natural minerals and mixtures thereof.

18. The coating of claim 17 wherein said inorganic inert particles have an average particle size from about 10 to about 80 microns and a Mohs hardness of at least about 5.

19. The coating of claim 18 wherein said inorganic inert particles are selected from the group consisting of alumina, zirconia, silicon carbide, titanium carbide, aluminum boride, and cristobalite.

20. The coating of claim 1 wherein said substrate comprises aluminum or aluminum shaped articles.

21. A method of applying a coating to a substrate comprising the sequential steps of:
    a. Preparing the surface of said substrate for said coating;
    b. Applying a primer composition comprising at least one heat resistant adhesion promoter and inorganic inert particles with an average particle size of at least about 20 micrometers ;
    c. Applying a topcoat composition comprising at least one fluorocarbon resin and at least one heat resistant adhesion promoter other than a fluoropolymer that may be the same or different than the adhesion promoter of said primer composition; and
    d. Baking the coated substrate at a temperature from about 380°C to about 440°C.

22. The method of claim 21 wherein said fluorocarbon resin is applied as a dispersion of said resin in water with a surfactant.

23. The method of claim 21 wherein said fluorocarbon resin is applied as a polymer powder with an organic liquid.

24. The method of claim 22 wherein said primer composition is substantially free of fluorocarbon resin.